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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,615

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Francis Xavier Kay

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07/10/2008

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PITTSBURGH, PA 15219

EXAMINER

TIETZEN, MARINA ANNETTE

ART UNIT

PAPER NUMBER

4177

MAIL DATE

DELIVERY MODE

07/10/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/537,615

**Applicant(s)**

KAY, FRANCIS XAVIER

**Examiner**

MARINA TIETJEN

**Art Unit**

4177

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 7-16 and 19-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 17-18, 31-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB08)  
Paper No(s)/Mail Date 06/03/2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-6, 17-18, 31-34, drawn to a valve.

Group II, claim(s) 7-16, 19-30, drawn to a sealing arrangement.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical feature of Group II, a generally U-shaped seal, is not shared by Group I. Therefore, the respective groups lack the same or corresponding special technical features and do not relate to a single general inventive concept.

Lack of unity of invention may be directly evident "a priori," that is, before considering the claims in relation to any prior art, or may only become apparent "a posteriori," that is, after taking the prior art into consideration. For example, independent claims to A+X, A+Y, X+Y can be said to lack unity a priori as there is no subject matter common to all claims. In the case of independent claims to A+X and A+Y, unity of invention is present a priori as A is common to both claims. However, if it can be established that A is known, there is a lack of unity a posteriori, since A (be it a single feature or a group of features) is not a technical feature that defines a contribution over the prior art.

3. During a telephone conversation with Arnold Silverman on June 25, 2008 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-6, 17-18, and 31-34. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7-16, and 19-30 are withdrawn from further

consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Drawings***

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "the effective area of said valve member" and "the area encompassed by said valve seat" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 3 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. It is unclear to the examiner whether the limitation given in the parentheses in lines 2-4, "(that is to say the region which has a position, along said axis, closer to said valve seat than said transverse wall)", is part of the claim or not. Presently, the limitation included in the parentheses will not be considered as a limitation for this particular claim.
7. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. It is unclear to the examiner whether the limitation given in the parentheses in lines 21-22, "(i.e. the end remote from said valve seat)", is part of the claim or not. Presently, the limitation included in the parentheses will not be considered as a limitation for this particular claim.
8. Claim 4 recites the limitation "the effective area of said valve member" in line 13, and the limitation "the area encompassed by said valve seat" in line 15. Also, Claim 5 recites the limitation "the effective area of said valve member" in line 13, and the limitation "the area encompassed by said valve seat" in line 15. There is insufficient antecedent basis for this limitation in the claim. It is unclear what is meant by these limitations for the purpose of examination.

9. Claims 6 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. It is unclear to the examiner whether the limitation given in the parentheses in line 2, "(high pressure edge)", is part of the claim or not. Presently, the limitation included in the parentheses will not be considered as a limitation for this particular claim.
10. Claims 31 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. It is unclear to the examiner whether the limitation given in the parentheses in line 13, "(and thus in an un-installed state)", is part of the claim or not. Presently, the limitation included in the parentheses will not be considered as a limitation for this particular claim.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

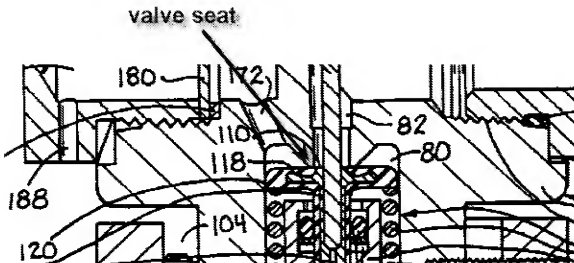
12. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Morgan et al. (US Patent No. 5,911,220).

Regarding Claim 1, Morgan et al. discloses a valve 20 (Fig. 1) including a valve housing 22, 78 (Fig. 1) providing a chamber 80 (Fig. 1) accommodating at least part of a valve member 118, 112 (Fig. 1), said chamber 80 forming at least part of a first or high

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pressure side (col. 4, line 35) of said valve 20, a valve port 110 (Fig. 1) leading from said chamber 80 to a second or low-pressure side (col. 4, line 44) of said valve 20, a valve seat (see Fig. A below) around the valve port 110, said valve member 118, 112 having a seating surface co-operating with the valve seat (Fig. 1) and the valve member being displaceable, along an axis passing through said port 110, respectively (a) in a first direction, to move said seating surface into said chamber and away from said valve seat and (b) in a second, opposite direction, to move said seating surface towards said valve seat, biasing means 114 (Fig. 1) being provided biasing said valve member 118, 112 in said second direction towards its closed position, wherein the valve housing 22, 78 affords, on the low pressure side of the valve, a shroud 78 (Fig. 1) extending transversely with respect to the valve axis and spaced from said valve port 110 so as to deflect any gas proceeding from said valve port 110 in a direction parallel with said valve axis, the valve housing defining with said shroud or transverse wall one or more transverse passages 200, 210 (Fig. 1) leading to opening 212 (Fig. 1) at the sides of the valve housing 22, 78, for the passage of gas issuing from said valve port 110.

**Figure A**



Regarding Claim 2, Morgan et al. discloses said transverse shroud 78 (Fig. 1) has a central aperture 82 (Fig. 1) through which extends, as a sliding fit, a central axial extension of said valve member 143 (Fig. 1), whereby the valve member 118, 112 (Fig. 1) is reliably guided for said axial movement.

### ***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 4-6, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan et al. (US Patent No. 5,911,220).



15. Regarding Claim 4, Morgan et al. discloses the invention as essentially claimed, including the valve member 118, 112 (Fig. 1) having a bore 124 (Fig. 1) extending axially from the high pressure end thereof and forming a cylinder 112 (Fig. 1) sealingly slidable, in said first and second directions, on a piston 144 (Fig. 1) fixed within said valve housing 22, 78(Fig. 1), to define therewith a further chamber 84(Fig. 1), said further chamber 84 in either case communicating with the low pressure side of the valve, and wherein said piston 144 has a base part 50 (Fig. 1) providing an outer periphery 62 (Fig. 1) received in an internal recess 40 (Fig. 1) provided around a bore 60, 80 (Fig. 1) which extends axially into the valve housing 22, 78 from a high pressure end thereof and which bore 60, 80 at least partially defines said chamber 80 (Fig. 1) accommodating the valve member 118, 112(Fig. 1), said internal recess 40 being disposed at a location remote from said valve seat ( see Fig. A above), the valve housing 22, 78 having one or more longitudinal slits 42, 58 (Fig. 1) therethrough extending from the high pressure end of the valve housing 22, 78, adjacent said internal recess 40 and extending through the location of said internal groove or recess 40.

However, Morgan et al. does not disclose the material of the valve housing being sufficiently resilient to allow the wall of the valve housing to be flexed outwardly sufficiently to allow said base part or insert to pass within said bore in the valve housing from said high pressure end thereof to the axial position of said internal groove or recess and to allow the wall of the valve housing thereafter to spring back around said base part or insert to locate said base part or insert in said internal groove or recess.

It would have been an obvious matter of design choice to modify Morgan et al.'s reference, to have a flexible housing to insert the base vs. a threaded assembly as shown in Morgan et al.'s reference, since applicant has not disclosed that installing the base by flexing the housing solves any stated problem or is for any particular purpose and it appears that the device would perform equally well with either designs.

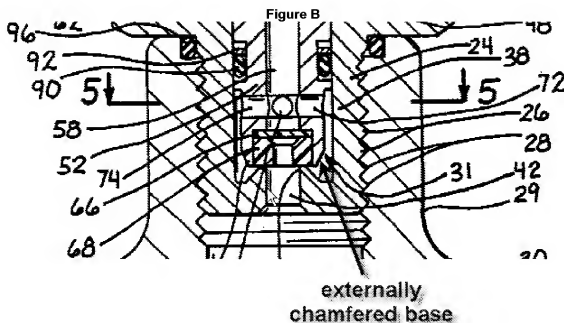
Furthermore, absent a teaching as to criticality that the base be installed by flexing it or the housing, this particular arrangement is deemed to have been known by those skilled in the art since the instant specification and evidence of record fail to attribute any significance (novel or unexpected results) to a particular arrangement. In re Kuhle, 526 F.2d 553,555,188 USPQ 7, 9 (CCPA 1975).

Regarding Claim 5, Morgan et al. discloses the invention as essentially claimed, including the valve member 118, 112 (Fig. 1) having a bore 124 (Fig. 1) extending axially from the high pressure end thereof and forming a cylinder 112 (Fig. 1) sealingly slidable, in said first and second directions, on a piston 144 (Fig. 1) fixed within said valve housing 22, 78 (Fig. 1), to define therewith a further chamber 84 (Fig. 1), said further chamber 84 in either case communicating with the low pressure side of the valve 20 (Fig. 1), and wherein said piston 144 has a base part 50 (Fig. 1) providing an outer periphery 62 (Fig. 1) received in an internal recess 40 (Fig. 1) provided around a bore 50, 80 (Fig. 1) which extends axially into the valve housing 22, 78 from a high pressure end thereof and which bore 50, 80 at least partially defines said chamber 80 (Fig. 1) accommodating the valve member 22, 78, said internal recess 40 being disposed at a location remote from said valve seat (see Fig. A above).

However, Morgan et al. does not disclose the base part is designed for resilient inward flexing to allow it to be inserted in the bore in the valve housing from said high pressure end thereof to spring into said groove when the base part or insert is at the longitudinal position of said internal groove or recess, thereby to retain said piston in place. It would have been an obvious matter of design choice to modify Morgan et al.'s reference, to have a flexible housing to insert the base vs. a threaded assembly as shown in Morgan et al.'s reference, since applicant has not disclosed that installing the base by flexing the housing solves any stated problem or is for any particular purpose and it appears that the device would perform equally well with either designs.

Furthermore, absent a teaching as to criticality that the base be installed by flexing it or the housing, this particular arrangement is deemed to have been known by those skilled in the art since the instant specification and evidence of record fail to attribute any significance (novel or unexpected results) to a particular arrangement. In re Kuhle, 526 F.2d 553,555,188 USPQ 7, 9 (CCPA 1975).

Regarding Claims 6 and 18, Morgan et al. discloses the outer edge of said base part 31 (Fig. 1) is externally chamfered (see Fig. B below), to facilitate insertion of the base part into the bore (see Fig. B below) in the valve housing 22, 78 (Fig. 1) from said lower end of the valve housing 22, 78.



16. Claims 3, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan et al. (US Patent No. 5,911,220) in view of Berfield (US Patent No. 4,799,285).

Regarding Claim 3 and 17, Morgan et al. discloses the invention as essentially claimed, except for the periphery of the valve housing is undercut in the region behind the transverse wall, in such a way that said undercut region, from a position adjacent said transverse wall which is closer to said axis than the periphery of said transverse wall, becomes gradually increasingly spaced from said axis with distance, measured parallel with said axis, away from said transverse wall, so that over said undercut region, the peripheral surface of the valve body is inclined with respect to said axis, and wherein the or each said opening or openings at the side of the valve body opens onto said inclined peripheral surface.

Berfield teaches the periphery of the valve housing is undercut in the region behind the transverse wall, in such a way that said undercut region, from a position adjacent said transverse wall which is closer to said axis than the periphery of said transverse wall, becomes gradually increasingly spaced from said axis with distance, measured parallel with said axis, away from a transverse wall, so that over said undercut region, the peripheral surface of the valve body is inclined with respect to said axis, and wherein the or each said opening or openings at the side of the valve body opens onto said inclined peripheral surface for the purpose of redirecting gas or air in an adjustable manner in a direction across, and more particularly normal, to the original direction of air exiting from the outlet port with an aesthetically pleasing design (col. 1, lines 51-62)

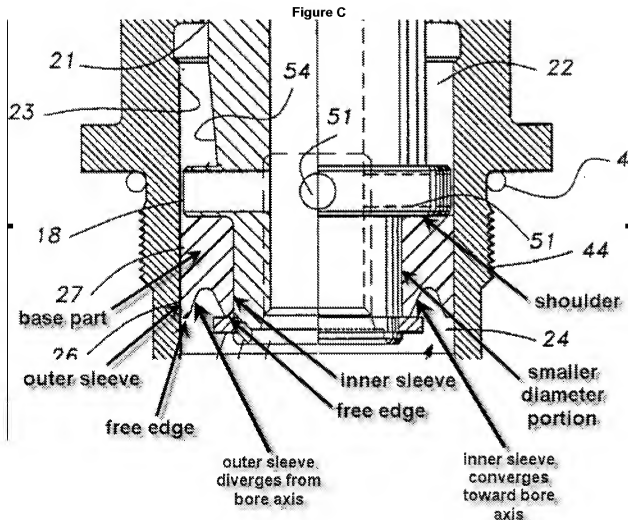
Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Morgan et al.'s invention, to include the periphery of the valve housing is undercut in the region behind the transverse wall, in such a way that said undercut region, from a position adjacent said transverse wall which is closer to said axis than the periphery of said transverse wall, becomes gradually increasingly spaced from said axis with distance, measured parallel with said axis, away from a transverse wall, so that over said undercut region, the peripheral surface of the valve body is inclined with respect to said axis, and wherein the or each said opening or openings at the side of the valve body opens onto said inclined peripheral surface, as suggested and taught by Berfield, for the purpose of redirecting gas or air in an adjustable manner in a direction across, and more particularly normal, to

the original direction of air exiting from the outlet port with an aesthetically pleasing design (col. 1, lines 51-62).

17. Claims 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan et al. (US Patent No. 5,911,220) in view of Holson et al. (US Patent No. 5,452,883).

Regarding Claims 31 and 32, Morgan et al. discloses the invention as essentially claimed, except for a sealing arrangement comprising a body having a bore, a seal for sealing said bore with respect to a piston or the like member disposed, centrally within the bore and providing a larger diameter portion, engaging; or closer to, the wall of said bore and a smaller diameter portion on a higher pressure side of said larger diameter portion, said seal comprising a resilient material which is generally U-shaped in half-section along the axis of said bore, the seal providing a base part abutting a shoulder extending from the periphery of said larger diameter part to the periphery of said smaller diameter part, said base providing the base of the U-section, the seal including an inner sleeve, defining an inner limb of said U-section and extending around said smaller diameter part, and extending away from said base to a free edge, the seal further including an outer sleeve extending from said base part along said bore to a free edge of the outer sleeve, said outer sleeve defining the other limb of said U-section, and wherein said outer sleeve, in an unstressed state of said seal, diverges slightly from the axis of the seal, with increasing distance from said base.

Holson et al. teaches a sealing arrangement comprising a body 12 having a bore 23, a seal 26 for sealing said bore 23 with respect to a piston 16, 18, centrally within the bore 23 and providing a larger diameter portion 18, engaging; or closer to, the wall of said bore 23 and a smaller diameter portion (see Fig. C below) on a higher pressure side of said larger diameter portion 18, said seal 26 comprising a resilient material which is generally U-shaped in half-section along the axis of said bore, the seal providing a base part (see Fig. C below) abutting a shoulder (see Fig. C below) extending from the periphery of said larger diameter part 18 to the periphery of said smaller diameter part, said base providing the base of the U-section, the seal including an inner sleeve (see Fig. C below), defining an inner limb of said U-section and extending around said smaller diameter part, and extending away from said base to a free edge (see Fig. C below), the seal 26 further including an outer sleeve (see Fig. C below) extending from said base part along said bore to a free edge of the outer sleeve (see Fig. C below), said outer sleeve defining the other limb of said U-section, and wherein said outer sleeve, in an unstressed state of said seal, (and thus in an uninstalled state) diverges slightly from the axis of the seal, with increasing distance from said base.



Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Morgan et al.'s invention to include a sealing arrangement comprising a body having a bore, a seal for sealing said bore with respect to a piston or the like member disposed, centrally within the bore and providing a larger diameter portion, engaging; or closer to, the wall of said bore and a smaller diameter portion on a higher pressure side of said larger diameter portion, said seal comprising a resilient material which is generally U-shaped in half-section along the axis of said bore,



the seal providing a base part abutting a shoulder extending from the periphery of said larger diameter part to the periphery of said smaller diameter part, said base providing the base of the U-section, the seal including an inner sleeve, defining an inner limb of said U-section and extending around said smaller diameter part, and extending away from said base to a free edge, the seal further including an outer sleeve extending from said base part along said bore to a free edge of the outer sleeve, said outer sleeve defining the other limb of said U-section, and wherein said outer sleeve, in an unstressed state of said seal, diverges slightly from the axis of the seal, with increasing distance from said base, as suggested and taught by Holson et al., for the purpose of preventing high-pressure gas from flowing from the bottom side of the larger diameter portion to the top side of the larger diameter portion, with the divergence of the sleeve creating a cup shape which is acted upon by the gas pressure and expands the cup-shape (col. 1, lines 45-50).

Regarding Claims 34-35, Morgan et al. discloses the invention as essentially claimed, except for a sealing arrangement wherein the inner sleeve, in an un-stressed state of the seal, converges slightly towards said central axis of the seal with increasing distance from said annular base.

Holson teaches a sealing arrangement wherein the inner sleeve converges slightly towards said central axis of the seal with increasing distance from said annular base (which maintains its form when un-stressed), for the purpose of defining a cup-shape, which is acted upon by gas pressure to expand the cup-shape and seal the first chamber from the second (col. 3, lines 45-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Morgan et al.'s invention to include a sealing arrangement wherein the inner sleeve converges slightly towards said central axis of the seal with increasing distance from said annular base (which maintains its form when un-stressed), as suggested and taught by Holson et al., for the purpose of defining a cup-shape, which is acted upon by gas pressure to expand the cup-shape and seal the first chamber from the second (col. 3, lines 45-47).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARINA TIETJEN whose telephone number is (571) 270-5422. The examiner can normally be reached on Mon-Thurs, 8:00AM-4:30PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quang D. Thanh can be reached on (571) 272-4982. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quang D. Thanh/  
Supervisory Patent Examiner,  
Art Unit 4177

/M. T./  
Examiner, Art Unit 4177